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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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(54) Title: DEGRADING LIGNOCELLULOSIC MATERIALS

(57) Abstract: A method for the degradation of lignocellulosic material by applying to the material an enzyme composition which is a mixture comprising at least a cellulase, xylanase and ligninase, and optionally other enzymes, such as a protease, lipase, urease, uricase, and/or pectinase, to solubilise or decompose the material at least partially. The method may be used for removing a biological deposit from a surface or location on or in which it is undesirably deposited. Typical deposits include human or animal faeces, bird droppings, and leaves. The cellulase, xylanase and ligninase component may be obtained as a mixture by cultivating a White Rot fungus, preferably using cattle dung, or a liquid extract, as an inducer.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N9/24 C12N9/02 C12N9/00 C12N9/48 C12N9/20
C12N9/80 C12N9/06 C12N9/42 C12S9/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, MEDLINE, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 325 241 A (NENE COLLEGE OF HIGHER EDUCATI ;UNIV WESTMINSTER (GB)) 18 November 1998 (1998-11-18) cited in the application page 3, line 23 -page 4, line 10; claims 1-8; examples 1-4 page 4, line 4 - line 10 --- -/--	1-3, 7-10, 14-19, 23,24

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 March 2004	19.04.04

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Loubradou, G

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GHOSH M ET AL: "PRODUCTION OF EXTRACELLULAR ENZYMES BY TWO PLEUROTUS SPECIES USING BANANA PSEUDOSTEM BIOMASS" ACTA BIOTECHNOLOGICA, AKADEMIE VERLAG, BERLIN, DE, vol. 18, no. 3, 1998, pages 243-254, XP009010790 ISSN: 0138-4988 page 245, paragraph 2 page 248, paragraph 2 -page 251, paragraph 2; figures 2-4 ---	1,2,10, 14-19, 23,24
X	SETHURAMAN A ET AL: "PLANT-CELL-WALL-DEGRADING ENZYMES PRODUCED BY THE WHITE-ROT FUNGUS CERIPORIOPSIS SUBVERMISPORA" BIOTECHNOLOGY AND APPLIED BIOCHEMISTRY, ACADEMIC PRESS, US, vol. 27, no. 1, 1998, pages 37-47, XP009010791 ISSN: 0885-4513 tables 1-3 ---	1,2,10, 14-17, 23,24
X	GB 2 261 877 A (KYOWA HAKKO KOGYO KK) 2 June 1993 (1993-06-02) abstract page 3, line 6 -page 4, line 3 ---	1,2,10, 14-17, 20,23,24
X	US 6 046 045 A (WETZSTEIN HEINZ-GEORG ET AL) 4 April 2000 (2000-04-04) example 3 ---	10, 14-16, 20-22
P,X	WO 03 059825 A (MORGOUN SERGE ;ONDEO DEGREMONT (FR)) 24 July 2003 (2003-07-24) page 5, line 22 - line 27; claims 1-6 page 14, line 16 - line 22 ---	1-3,7,10
E	WO 03 080873 A (KLENZYME LTD ;COVINGTON ANTHONY DALE (GB); EVANS CHRISTINE STELLA) 2 October 2003 (2003-10-02) cited in the application claims 11,15; examples 1-6 ---	1-3,7-9
A	US 4 144 354 A (UNNO NAOYUKI ET AL) 13 March 1979 (1979-03-13) example 1 ---	
A	US 5 872 091 A (HERWEIJER MARGARETA A ET AL) 16 February 1999 (1999-02-16) the whole document ---	

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PAVLUKOVA E B ET AL: "Extracellular proteolytic enzymes of filamentous fungi" BIOCHEMISTRY (MOSCOW), vol. 63, no. 8, August 1998 (1998-08), pages 899-928, XP009021330 ISSN: 0006-2979 pages 921 and 922, the paragraphs entitled "Effect of external factors on protease secretion"	
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X	PUNIYA ANIL K ET AL: "Determination of enzyme activities of lignocellulolytic strains in solid substrate fermented products" INDIAN JOURNAL OF ANIMAL NUTRITION, vol. 12, no. 4, 1995, pages 205-212, XP001179864 ISSN: 0970-3209	1,2
Y	abstract; tables 1,2	10,12, 14-16, 20-24
Y	TONON F ET AL: "NITROGEN AND CARBON REGULATION OF LIGNIN PEROXIDASE AND ENZYMES OF NITROGEN METABOLISM IN PHANEROCHAETE-CHRYSOSPORIUM" EXPERIMENTAL MYCOLOGY, vol. 14, no. 3, 1990, pages 243-254, XP009026654 ISSN: 0147-5975 abstract; table 3	10,12, 14-16, 20-24
A	US 4 566 985 A (BRUNO LEONARD C ET AL) 28 January 1986 (1986-01-28) page 1, left-hand column, paragraph 1 page 1, right-hand column, line 4 - line 38	
A	DOBOZI MARIA SZAKACS ET AL: "Xylanase activity of Phanerochaete chrysosporium" APPLIED AND ENVIRONMENTAL MICROBIOLOGY, vol. 58, no. 11; 1992, pages 3466-3471, XP009026985 ISSN: 0099-2240 the whole document	

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INTERNATIONAL SEARCH REPORT

PCT/GB 03/03384

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	NOUR EL-DEIN MAHMOUD ET AL: "Screening of some fungi for uricolytic activity" QATAR UNIVERSITY SCIENCE JOURNAL, vol. 16, no. 1, 1996, pages 71-76, XP001179728 ISSN: 1023-8948 paragraph bridging pages 74 and 75 page 8; table 1	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 03/03384

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [X] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

1-3 (partially), 4-5 (completely), 7-10 (partially), 11-12 (completely), 14-24 (partially)

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

[X] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-3, 7-10, 14-24 (partially), 4 and 11 (completely)

   Compositions comprising a xylanase, a cellulase, a ligninase and a protease and methods using said compositions.

2. Claims: 1-3, 7-10, 14-24 (partially)

   Compositions comprising a xylanase, a cellulase, a ligninase and a lipase and methods using said compositions.

3. Claims: 1-3, 7-10, 14-24 (partially)

   Compositions comprising a xylanase, a cellulase, a ligninase and a urease and methods using said compositions.

4. Claims: 1-3, 7-10, 14-24 (partially), 5 and 12 (completely)

   Compositions comprising a xylanase, a cellulase, a ligninase and a uricase and methods using said compositions.

5. Claims: 1-3, 7-10, 14-24 (partially), 6 and 13 (completely)

   Compositions comprising a xylanase, a cellulase, a ligninase and a pectinase and methods using said compositions.

INTERNATIONAL SEARCH REPORT

PCT/GB 03/03384

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